Final
Archaeological Inventory Survey for the Airport Section (Construction Section 3) of the Honolulu High-Capacity Transit Corridor Project, Hālawa and Moanalua Ahupua‘a, ‘Ewa and Honolulu Districts, Island of O‘ahu TMK Sections [1] 1-1 and 9-9 (Various Plats and Parcels) Volume 1 of 2

Prepared for
The City and County of Honolulu
and
The Federal Transit Administration

On Behalf of
PB Americas, Inc.

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Management Summary

Reference	Archaeological Inventory Survey for the Airport Section 3 of the Honolulu High-Capacity Transit Corridor Project, Hālawa and Moanalua Ahupua‘a, ‘Ewa and Honolulu Districts, O‘ahu Island TMK Sections [1] 1-1 and 9-9 (Hammatt et al. 2013)
Date	Revised August 2013
Project Number (s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: HALAWA 13
Investigation Permit Number	The field work for this archaeological inventory survey (AIS) was carried out under archaeological permit number 12-04 issued by the Hawai‘i State Historic Preservation Division/ Department of Land and Natural Resources (SHPD/DLNR) per Hawai‘i Administrative Rules (HAR) §13-282.
Project Location and AIS Study Area	The Honolulu High-Capacity Transit Corridor Project (HHCTCP) extends about 37.0 kilometers (23 miles) from Kapolei in the west to the Ala Moana Center in the east. The project was divided into four construction sections, with Section 1 towards Kapolei and Section 4 towards Ala Moana. The study area for this Airport AIS is most of the Section 3 construction area, with a small portion of the westernmost Airport construction section covered by the Section 2 AIS and a small portion of the easternmost Airport construction section covered by the Section 4 AIS. This Airport Section 3AIS addresses the HHCTCP corridor extending from Kamehameha Highway at Kalaloa Drive (just northwest of Hālawa Stream) in the west to Kamehameha Highway at Middle Street (just west of Kalihi Stream) in the east. The Section 2 AIS by general agreement extended slightly east of the construction section terminus at Aloha Stadium (to Hālawa Stream); the AIS was reviewed and accepted by SHPD on May 23, 2012, Log No. 2012.1449, Doc. No. 1205NN23. Similarly, the AIS for construction Section 4, by general agreement extends slightly west from the western terminus of construction Section 4 in the vicinity of the Middle Street Transit Center (by Kalihi Stream).
Land Jurisdiction	Federal, State, City, and Private. Federal lands bounded by Radford Drive, Tarawa Drive, and Kamehameha Highway are proposed for the Pearl Harbor Naval Base Station. State lands include portions of the corridor along Kamehameha Highway, North Nimitz Highway, the H-1 Freeway, Aolele Street, and the Honolulu International Airport. City lands include portions of the corridor along Ualena Street and Waiwai Loop. Private lands (privately owned at the present time) are understood to include: Harry B. Kronick Trust lands near Kamehameha Highway and Kalaoa Street and private holdings on Waiwai Loop including lands of the John V. Brewer Trust, Chevron USA Inc., International Express, Inc, Queen Bee Limited Partnership, Waiwai Loop Rental Inc., Window World Inc., Watumull Enterprises Ltd., Alert Holdings Group, Inc., and 2676 Waiwai Loop LLC.

Agencies	City and County of Honolulu (City), SHPD/DLNR, Federal Transit Administration (FTA), U.S. Navy, and the Hawai‘i State Department of Transportation (Airport Division)
Funding	FTA, City
Area of Potential Effect (APE) and AIS Study Area Acreage	The HHCTCP APE for archaeological cultural resources is defined in the HHCTCP final Programmatic Agreement (PA) (Stipulation II.A.1) as all areas of direct ground disturbance. The Airport Section 3 AIS study area includes all of the HHCTCP APE between Station 994+00 and Station 1248+00, for a distance of 7.74 kilometers (25,400 feet or 4.8 miles). Project engineers estimate that the area of direct ground disturbance for Airport Section 3 will be about 3.67 ha (9.06 acres or 394,504 square feet) including the three stations.
Historic Preservation Regulatory Context	Due to federal (FTA) funding and use of federal U.S. Navy lands, this project is a federal *undertaking*, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA), and Section 4(f) of the Department of Transportation Act. Through the Section 106 historic preservation review process, the project's lead federal agency, FTA, has determined that the undertaking will have an adverse effect on historic properties currently listed, or eligible for listing, on the National Register of Historic Places (NRHP). The Hawai‘i State Historic Preservation Officer (SHPO) concurred with this undertaking effect determination (Programmatic Agreement, January 18, 2011). To mitigate the undertaking's potential adverse effect, a PA was executed January 18, 2011, with FTA, the Hawai‘i SHPO, the United States Navy, and the Advisory Council on Historic Preservation as signatories, and the City as an invited signatory. PA Stipulation III requires that an archaeological inventory survey plan (AISP) be prepared and approved by the SHPD for each of the four HHCTCP construction sections. An AISP for the Airport Section (Hammatt and Shideler 2011) was prepared to fulfill PA Stipulation III and was accepted in the SHPD Section 106 review letter of December 2, 2011 (Log No. 2011.2167, Doc. No. 1211NN01). The AISP defines the scope of work and details the proposed methods and sampling strategy for this AIS in accordance with the requirements for an AISP stated in HAR §13-275-5(c). Subsequently consideration was given to a possible alternate site (Alternate A) for the Honolulu International Airport station to be located about 60 m south (*makai*) of the Honolulu International Airport station location addressed in the Hammatt and Shideler (2011) AISP. This possible alternate station site was addressed in an Addendum AISP (Hammatt and Shideler 2013). The Addendum AISP was accepted in the SHPD Section 106 review letter of March 1, 2013 (Log No. 2013.1957, Doc. No. 1302SL29).

	Following the approved AISP (Hammatt and Shideler 2011) as amended in the AISP Addendum (Hammatt and Shideler 2013) the Airport AIS investigation was carried out. This report was prepared in consideration of the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* and to support the project's PA and Section 106 compliance. This AIS investigation also supports the undertaking's historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and Hawai‘i Administrative Rules (HAR) §13-275 governing procedures for historic preservation review for governmental projects, and §13-276 governing standards for Archaeological Inventory Surveys and Reports. Any Native Hawaiian human remains, funerary objects, sacred objects, or objects of cultural patrimony discovered on federal lands (there were no such finds) would have required compliance with the Native American Graves Protection and Repatriation Act (43 CFR Part 10). Human skeletal remains and associated objects found on non-federal lands (there were no such finds) would have been treated in accordance with HRS Chapter 6E-43 and HAR §13-300. A *Consultation Protocol for Iwi Kūpuna Discovery* (Hammatt 2011) was developed to address any identifications of human skeletal remains (was reviewed and approved by FTA, per the project PA). In addition, the identification and assessment of National-and Hawai‘i Register eligibility for the undertaking's architectural resources (e.g., historic roads, bridges, and structures) was conducted by historic architectural firm Mason Architects, Inc., in association with the undertaking's Final Environmental Impact Statement (FEIS).
Document Purpose	This AIS investigation was conducted to identify, document, and make National Register of Historic Places (National Register) and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for the Airport Section 3 study area's archaeological cultural resources[1]. In consultation with the SHPD, this investigation was also designed to fulfill the State requirements for an AIS per Hawai‘i Administrative Rules (HAR) §13-13-276. The investigation includes an undertaking-specific effect recommendation and mitigation recommendations for the archaeological cultural resources identified as National- and Hawai‘i Register eligible. This document is intended to support undertaking-related historic preservation consultation among stake-holding federal and state agencies, interested Native Hawaiian groups and individuals, community groups, and other interested parties.
Summary of Fieldwork Effort	Forty (40) test excavations were proposed within the AISP. A total of 47 test excavations were completed 18 % more than specified in the AISP. The additional seven test excavations were conducted in accordance with the Addendum AISP to address a proposed alternative location for the Honolulu International Airport Station footprint (Alternative A). Fieldwork was carried out under the supervision of

	Matt McDermott, M.A. (principal investigator), between March 29, 2012 and October 2, 2012. Field staff included the following 21 CSH archaeologists: Jennifer Bellville, Kelly Burke, Rebecca Choi, Ellen DeLeeuw, Brittany Enanoria, Randy Groza, Nigel Kingsbury, Nifae (Mana) Hunkin, Andrea Kay, Fred LaChance, Kimi Matsushima, Leandra Medina, Abbey Mierzejewski, Michelle Pammer, Michael (Pablo) Rivera, Andrew Soltz, Ena Sroat, Tyler Turran, Todd Tulchin, Josephine Yucha, and Trevor Yucha. Fieldwork required 1,120 person hours or 140 person days to complete.
Cultural Resources[1]/Historic Properties[2] Identified and Recommended Eligibility to the National/Hawai‘i Registers[3]	SIHP # 50-80-13-7420 consists of sections of buried asphalt road way, likely associated with an early alignment of Kamehameha Highway, or possibly another yet identified mid-twentieth century road. It was assessed as National- and Hawai‘i Register-eligible under Criterion D. SIHP # 50-80-13-7421 consists of buried concrete slabs, a prepared coral pavement, and underlying base course identified as probable remnants of warehouses and/or other infrastructure erected by the military in 1942-1943. It was assessed as National-and Hawai‘i Register-eligible under Criterion D.
Effect Recommendation	Through the Federal Section 106 historic preservation review process, this undertaking has been determined to have an “adverse effect” on historic properties. The AIS investigation results are in keeping with this federal effect determination because Airport Section 3 (also known as Construction Section 3) will have an adverse effect on SIHP # 50-80-13-7420 and SIHP # 50-80-13-7421. Under Hawai‘i State historic preservation review legislation, CSH’s project-specific effect recommendation is “effect, with proposed mitigation commitments.” The recommended mitigation measures for the Construction Section 3 AIS will reduce the project’s effect on the two identified archaeological cultural resources, SIHP # 50-80-13-7420 and SIHP # 50-80-13-7421.
Mitigation[4] Recommendations	Based on the results of this AIS investigation, a combination of on-site and on-call archaeological monitoring is recommended as an appropriate archaeological mitigation measure during the Airport Section 3 construction. Based on AIS results and background research, an on-site archaeological monitoring program is recommended for (1) near the banks of Hālawa Stream, (2) in the area of the natural sediments on the west edge of the former west entrance to Ke‘ehi Lagoon (the area from Lagoon Drive Station extending 300 m east), and (3) for the locations of identified archaeological resources SIHP # 50-80-13-7420 and SIHP # 50-80-13-7421. The details of the archaeological monitoring program are to be specified in an archaeological monitoring plan to be reviewed and approved by SHPD prior to construction work within the Airport Section 3 construction area.

[1]In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are at least 50 years old, although there are exceptions, and include buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance.

[2] Historic properties, as defined in 36 CFR 800.16, are any prehistoric or historic districts, sites, buildings, structures, or objects included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This includes artifacts, records, and remains that are related to and located within such properties, as well as properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPO. Under federal legislation, a project's (undertaking's) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai‘i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under state law, and a project's effect and potential mitigation measures are evaluated based on the project's potential impact to "significant" historic properties (those historic properties determined eligible, based on their integrity and historic/cultural significance in terms of established significance criteria, for inclusion in the Hawai‘i Register of Historic Places). Determinations of eligibility to the Hawai‘i Register result when a state agency official's historic property "significance assessment" is approved by SHPD, or when SHPD itself makes an eligibility determination for a historic property.

[3]Cultural resource significance is evaluated and expressed as eligibility for listing on the National and/or Hawai‘i Register of Historic Places. To be considered eligible for listing on the National and/or Hawai‘i Register a cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following broad cultural/historic significance criteria: "A" reflects major trends or events in the history of the state or nation; "B" is associated with the lives of persons significant in our past; "C" is an excellent example of a site type/work of a master; "D" has yielded or may be likely to yield information important in prehistory or history; and, "E" (Hawai‘i Register only) has traditional cultural significance to an ethnic group, includes religious structures and/or burials.

[4]Under Hawai‘i State historic preservation review legislation, there are five potential forms of historic preservation mitigation: (A) Preservation; (B) Architectural Recordation; (C) Archaeological Data Recovery (which includes archaeological monitoring); (D) Historical Data Recovery; and (E) Ethnographic Documentation (HAR §13-275-8).

Table of Contents

List of Figures

List of Tables

Section 1 Introduction

1.1 Project Background

Cultural Surveys Hawai‘i, Inc. (CSH) completed this archaeological inventory survey (AIS) for Construction Section 3 (Airport) of the Honolulu High-Capacity Transit Corridor Project (HHCTCP) for the Honolulu Authority for Rapid Transit (HART) of the City & County of Honolulu (City), for the Federal Transit Administration (FTA), and on behalf of PB Americas, Inc. (PB). The AIS Airport study area is from Kalaloa Drive (just northwest of Hālawa Stream) in the west to Middle Street (just west of Kalihi Stream) in the east, located within the traditional Hawaiian land divisions of Hālawa (‘Ewa District) and Moanalua Ahupua‘a (Honolulu District), Island of O‘ahu, TMK: [1] 1-1 and 9-9 (Various Plats and Parcels).

The entire proposed HHCTCP extends about 37 km (23 miles) from Kapolei in the west to Ala Moana Center in the east. This AIS report is for the Airport Section 3 construction portion that extends from Station 994+00 Kamehameha Highway at Kalaloa Drive to Station 1248+00 (Kamehameha Highway at Middle Street, for a distance of 7.74 km (25,400 feet or 4.8 miles). This Airport Section 3 portion includes the following four transit facilities: (1) Pearl Harbor Naval Base Station, (2) Honolulu International Airport Station, (3) Lagoon Drive Station, and (4) a “System Site” transit facility 250 m east of the Lagoon Drive Station.

The western terminus of Airport Section 3 AIS begins on Kamehameha Highway at Kalaloa Drive, 100 m northwest of Halawa Stream. This location correlates with the southeast terminus of the Construction Section 2 AIS study area. The Airport Section 3 route continues south on Kamehameha Highway. Directly south of Radford Drive, the Pearl Harbor Naval Base Station platform will extend over the highway with an associated section of the station at ground level on the southeast corner of Radford Drive and Kamehameha Highway. From this station, the route continues south on the Kamehameha Highway, passes through the Center Drive intersection, and continues south following the alignment of the H-1 Freeway Viaduct before crossing to the *makai* (seaward) side of Nimitz Highway by Valkenburgh Street. The route continues southeast past Main and Elliott Streets. At Aolele Street the route turns south (*makai*), continuing along the east side of the *mauka/makai* (inland/seaward) trending Aolele Street, curving east at Ala Onaona Street, to the Honolulu International Airport Station. The two alternate Honolulu International Airport Station locations are located (in a presently at-grade parking area) just northwest of the main Honolulu Airport overseas parking structure. From that station, the route continues east following the alignment of Ala Onaona Street, crossing Pai‘ea Street. Past Aowena Place, the route angles *mauka* to cross from Aolele Street to Ualena Street. The route then follows Ualena Street, crossing Lagoon Drive. The Lagoon Drive Station is immediately east of Lagoon Drive on the south portion of Waiwai Loop (*mauka* and *makai* entrance buildings are on either side of this portion of Waiwai Loop). From that station, the route continues east on the south side of the south portion of Waiwai Loop, crossing over an area of warehouses to Ke‘ehi Lagoon Beach Park. The route angles northeast through Ke‘ehi Lagoon Beach Park, *makai* of the tennis courts, and crosses Moanalua Stream *makai* and parallel to Nimitz Highway. In the short stretch between Moanalua Stream and Kalihi Stream, the route crosses *mauka* of Nimitz Highway, joining Kamehameha Highway at the Middle Street intersection where it meets the Section 4 AIS study area.

The study area for this AIS is most of the third construction section, with a small portion of the westernmost Airport construction section covered by the Section 2 AIS and a small portion of the easternmost Airport construction section covered by the Section 4 AIS. This AIS addresses the HHCTCP corridor extending from Kamehameha Highway at Kalaloa Drive (just northwest of Hālawa Stream) in the west to Kamehameha Highway at Middle Street (just west of Kalihi Stream) in the east. This Phase 3 AIS study is depicted on a U.S. Geological Survey 7.5-Minute Series Topographic Map, Pearl Harbor (1999) and Honolulu (1998) quadrangles (Figure 1), on the two applicable Tax Map Key (TMK) section maps (Figure 2 and Figure 3) and an aerial photograph (Figure 4). This study area primarily occurs within existing road right-of-ways owned by the State of Hawai‘i or the City, including Kamehameha Highway, North Nimitz Highway, Aolele Street, and Ualena Street to the vicinity of Lagoon Drive, then back to Nimitz Highway, then turning to Kamehameha Highway just west of Kalihi Stream. Support facilities along the project corridor are located on adjacent privately owned lands.

The HHCTCP's purpose is to provide much needed rapid transit transportation in the highly congested east-west transportation corridor between Kapolei and the Ala Moana Center via a fixed guideway rail transit system. In addition to the guideway, the transit system will involve construction of transit stations and ancillary support facilities. The four transit facilities planned for Airport Section 3 are the following: (1) Pearl Harbor Naval Base Station, (2) Honolulu International Airport Station, (3) Lagoon Drive Station, and (4) a "System Site" transit facilitiy 250 m east of the Lagoon Drive Station (Figure 4). The project also requires relocation of existing utility lines within the project corridor that conflict with the proposed project design. Minimally, land-disturbing activities will include grading of facility locations and excavations for guideway column foundations, subsurface utility relocation and installation, and station and ancillary facility foundation construction.

1.2 Historic Preservation Regulatory Context

Due to federal (FTA) funding and use of federal U.S. Navy lands, this project is a federal undertaking as defined in 36 CFR 800.16, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), the National Environmental Policy Act (NEPA), and Section 4(f) of the Department of Transportation Act. Through the Section 106 historic preservation review process, the project's lead federal agency, FTA, has determined that the undertaking will have an adverse effect on historic properties currently listed, or eligible for listing, on the National Register of Historic Places (NRHP). The Hawai‘i State Historic Preservation Officer (SHPO) concurred with this undertaking effect determination (Programmatic Agreement, January 18, 2011).

To alleviate the undertaking's potential adverse effect, a Programmatic Agreement (PA) was executed January 18, 2011, with FTA, Hawai‘i SHPO, the U.S. Navy, and the Advisory Council on Historic Preservation as signatories. PA Stipulation III requires that an archaeological inventory survey plan (AISP) be prepared and approved by SHPD for each of the four HHCTCP construction sections.

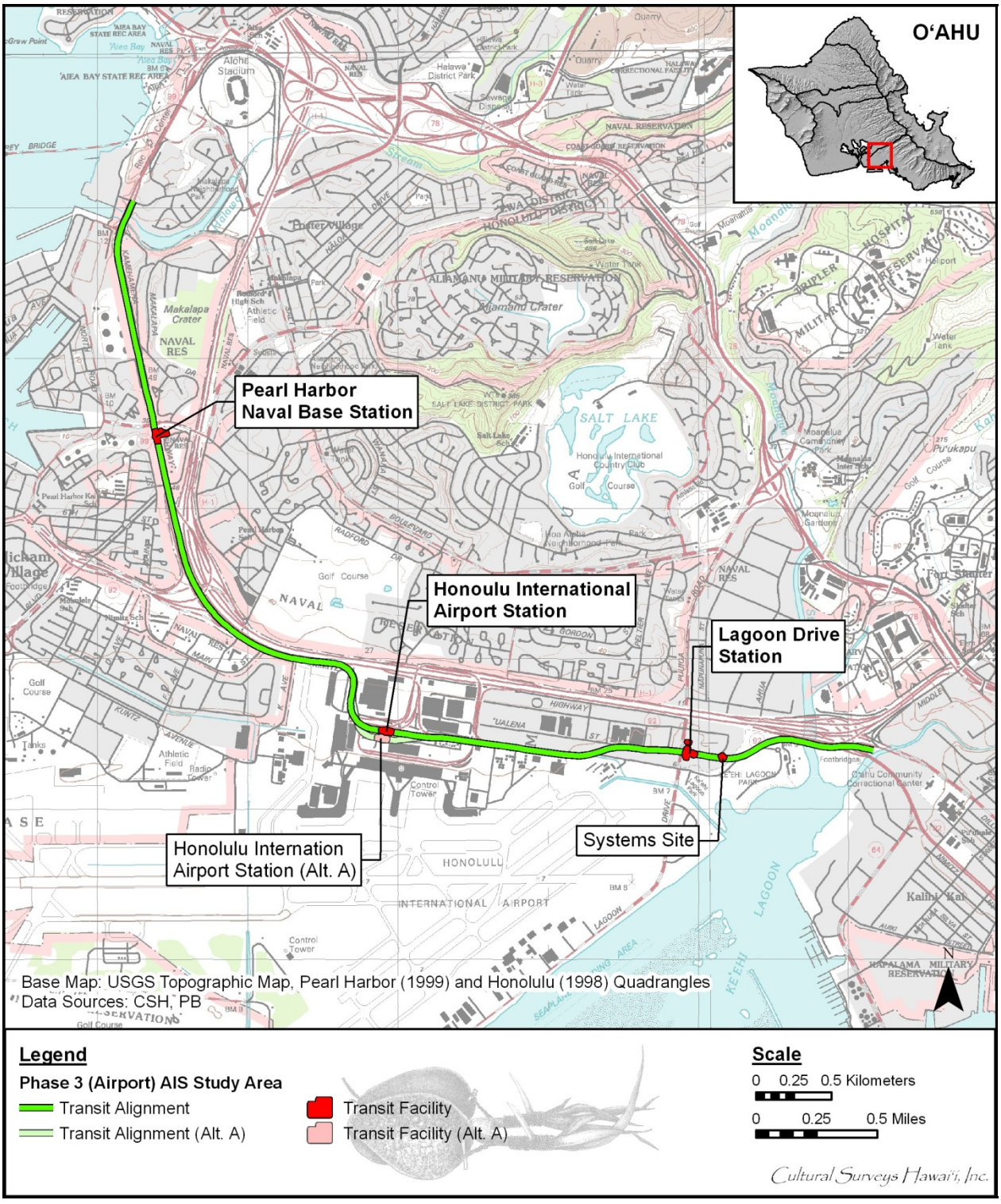

Figure 1. Airport Section 3 (and alternate alignment at Honolulu International Airport Station) AIS study area shown on U.S. Geological Survey 7.5-minute Series topographic maps, Pearl Harbor (1999) and Honolulu (1998) quadrangles

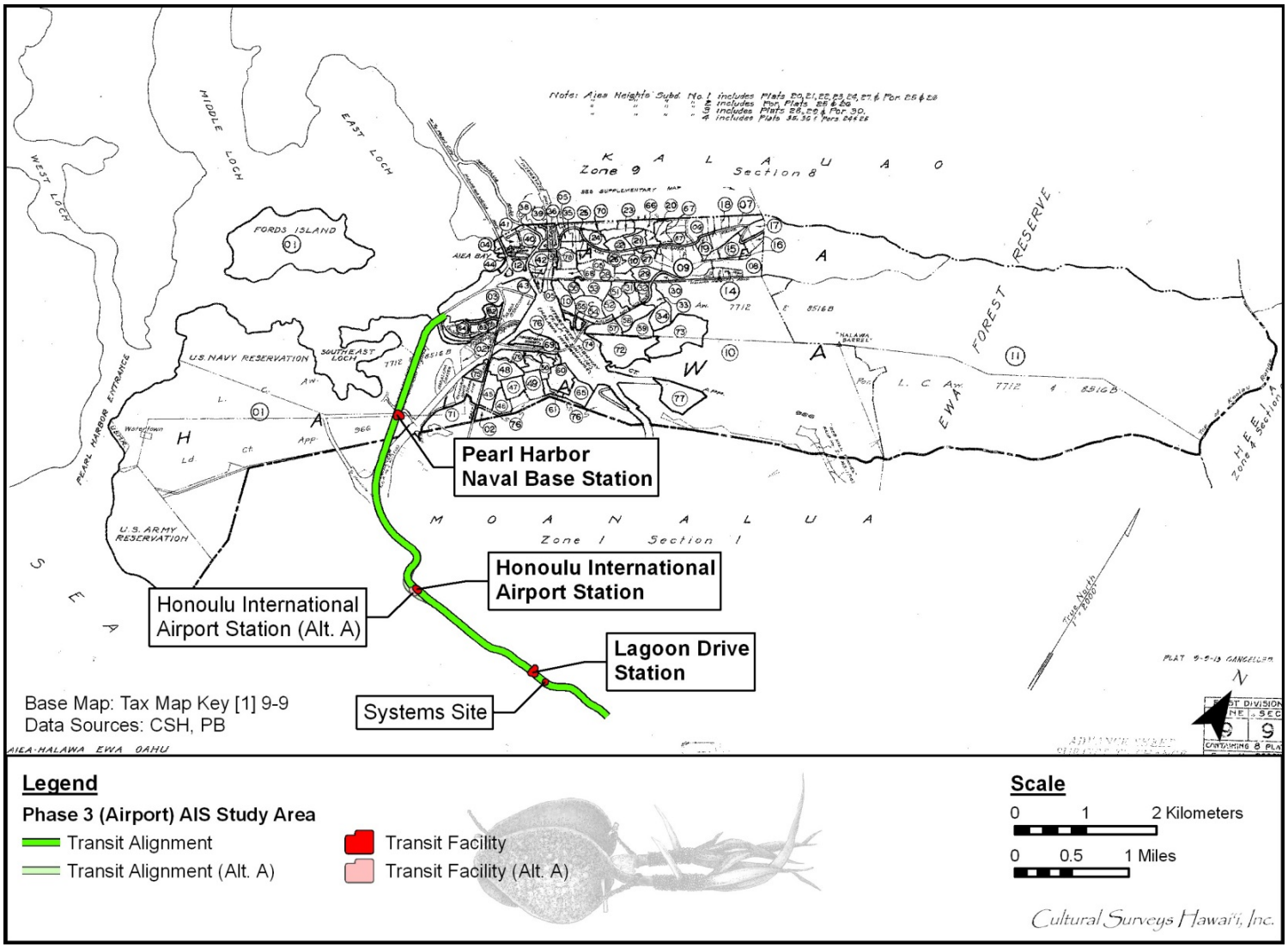

Figure 2. Tax Map Key (TMK) Section map [1] 9-9 (Hālawa) showing western portion of Airport Section 3 AIS study area; also shown is study area in TMK Section [1] 1-1 (Moanalua)

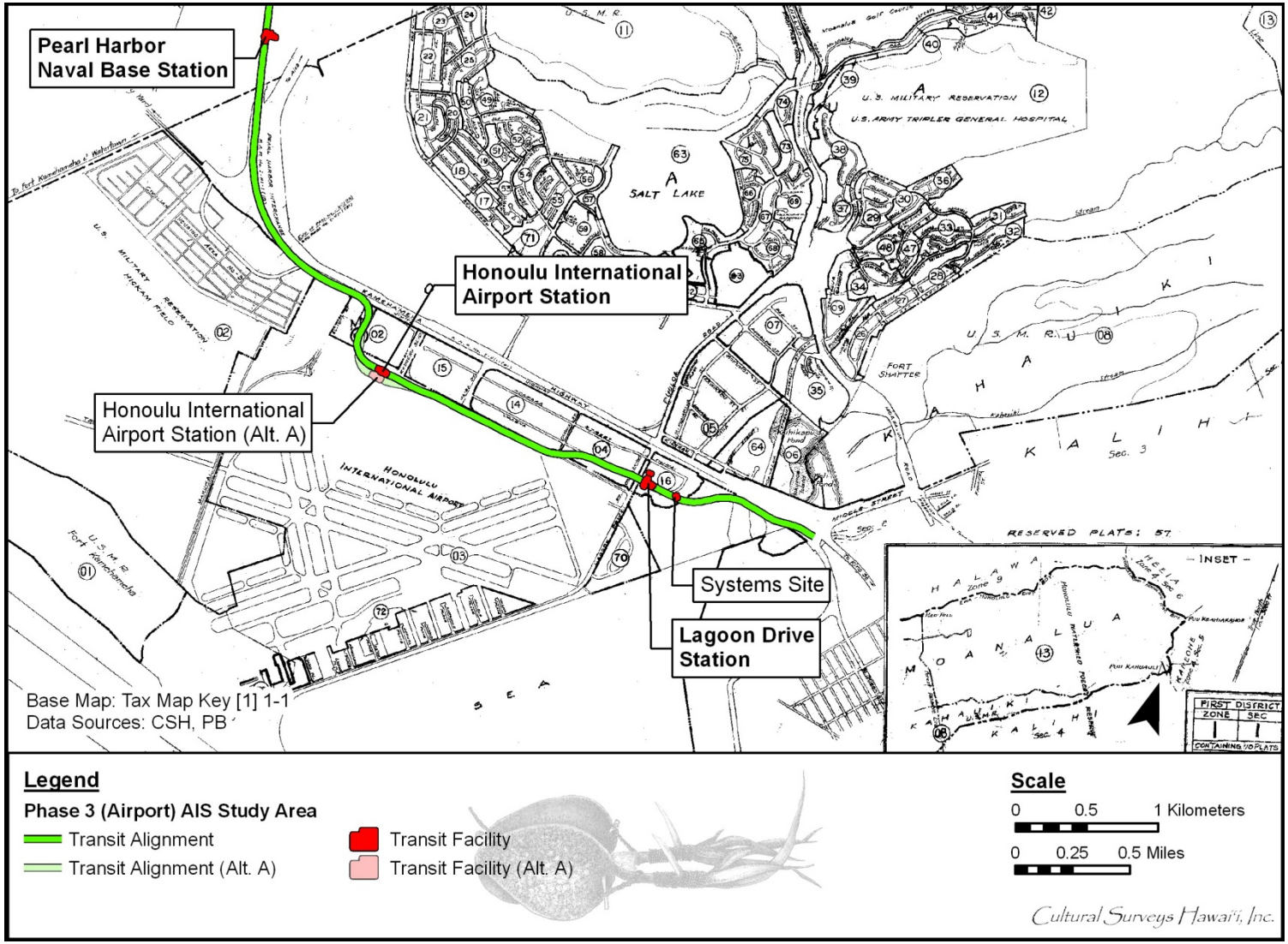

Figure 3. Tax Map Key (TMK) Section map [1] 1-1 showing eastern portion of Airport Section 3; and alternate alignment at Honolulu International Airport Station) AIS study area; also shown is Pearl Harbor Naval Base Station in TMK Section map [1] 9-9

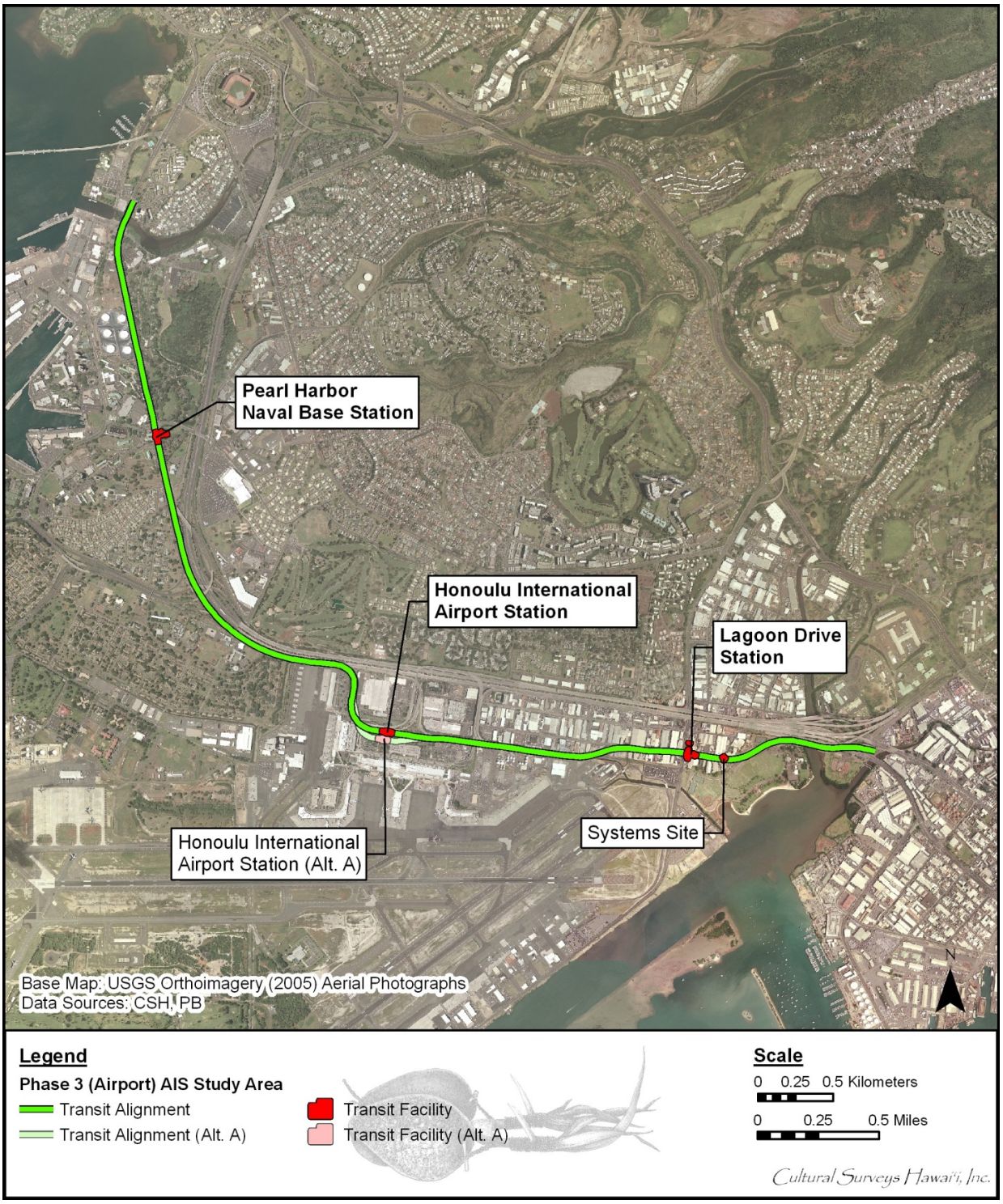

Figure 4. Overlay of the Airport Section 3 corridor and stations, including an alternate alignment at Honolulu International Airport Station (Alt.A) on a 2005 aerial photograph of the area (source: U.S. Geological Survey Orthoimagery 2005)

An AISP for the Airport Section 3 study area (Hammatt and Shideler 2011) was prepared to fulfill PA Stipulation III and was accepted by SHPD on December 2, 2011 (Log No. 2011.2167, Doc No. 1211NN01). The AISP defines the scope of work and details the proposed methods and sampling strategy for this AIS, in accordance with the requirements for an AISP as stated in Hawai‘i Administrative Rules (HAR) §13-275-5(c). Subsequently, consideration was given to a possible alternate site (Alternate A) for the Honolulu International Airport station located about 60 m south (*makai*) of the Honolulu International Airport station location indicated in the AISP (Hammatt and Shideler 2011). This possible alternate station site was addressed in an AISP Addendum (Hammatt and Shideler 2013) and was accepted by SHPD on March 1, 2013 (Log No. 2013.1957, Doc. No. 1302SL29) (see Volume 2, Appendix D).

The Airport Section 3 AIS investigation was carried out in accordance with the approved AISP and Addendeum AISP. This report was prepared in accordance with the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* and in support of the undertaking's PA and Section 106 compliance. This AIS investigation has also been prepared in support the undertaking's historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and HAR §13-275 governing procedures for historic preservation review for governmental projects, and §13-276 governing standards for Archaeological Inventory Surveys and Reports. This AIS is prepared for the review and concurrence of the Hawai‘i SHPO/SHPD.

Any Native Hawaiian human remains, funerary objects, sacred objects, or objects of cultural patrimony discovered on federal lands (there were no such finds) would have required compliance with the Native American Graves Protection and Repatriation Act (43 CFR Part 10). Human skeletal remains and associated objects found on non-federal lands (there were no such finds) would have been treated in accordance with HRS Chapter 6E-43 and HAR §13-300.

An AIS of HHCTCP Construction Section 1 (extending east from the East Kapolei Station to the Pearl Highlands Station) was completed by CSH in February 2010 and was accepted by SHPD on April 19, 2010 (Log No. 2010.1749, Doc. No. 1004MV01).

An AIS of HHCTCP Construction Section 2 (extending east from Waimano Home Road to Kalaloa Street, just west of Hālawa Stream) was completed by CSH in May 2012 and was accepted by SHPD on May 23, 2012 (Log No. 2012.1449, Doc. No. 1205NN23).

An AISP for HHCTCP Construction Section 4 was accepted by SHPD on October 25, 2011 (Log No. 2011.2379, Doc. No. 1110NN08). The AIS report for Section 4 is in preparation. Similar to the AISP Addendum for Airport Section 3, an AISP Addedum was prepared Section 4 which addressed changes from the vicinity of Ward Avenue and Halekauwila Street to the vicinity of Queen Street and Kamake‘e Streets (Hammatt et al. 2013). The AISP Addendum for Section 4 was accepted by SHPD on March 1, 2013 (Log No. 2013.1958, Doc. No. 1302SL28).

The HHCTCP area of potential effect (APE) for archaeological cultural resources is defined in the Final PA (Stipulation II.A.1.) as all areas of direct ground disturbance. For the Airport Section 3 AISP (most of Construction Section 3), HHCTCP engineers estimate that the undertaking's area of direct ground disturbance is about 3.67 ha (9.06 acres or 394,504 square feet). These 3.67 ha are the survey area for Airport Section 3 AIS investigation.

Identification and National- and Hawai‘i Register eligibility recommendations for the undertaking's architectural cultural resources, including historic roads, bridges, and structures,

were conducted by historic architectural firm Mason Architects, Inc., in association with the undertaking’s Final Environmental Impact Statement (FEIS).

Generally, under both Federal and Hawai‘i State historic preservation legislation, archaeological inventory surveys are designed to identify, document, and collect enough data to evaluate the significance of potential “historic properties.” As discussed in the paragraphs below, there are important distinctions between the Federal and Hawai‘i State definitions of “historic property.” To alleviate any confusion these different definitions might cause, CSH has opted in this document to use the more generic term “cultural resources” and, as defined below, in its discussion of the cultural remains within the Airport Section 3 study area. The use of the term cultural resources in these instances is common practice in cultural resource management and is in keeping with the historic preservation requirements and definitions of both 36 CFR part 800 and HAR §13-275.

In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are at least 50 years old, although there are exceptions, and include: buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance.

Historic properties, as defined in 36 CFR part 800.16, are any prehistoric or historic districts, sites, buildings, structures, or objects included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This includes artifacts, records, and remains that are related to and located within such properties, as well as properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPO. Under federal legislation, an undertaking’s potential effect on historic properties must be evaluated and potentially mitigated.

Under Hawai‘i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their significance under state law, and a project’s effect and potential mitigation measures are evaluated based on the project’s potential impact to “significant” historic properties (those historic properties determined eligible, based on established significance criteria, for inclusion in the Hawai‘i Register). Determinations of eligibility to the Hawai‘i Register result when a state agency official’s historic property “significance assessment” is concurred with by SHPD, or when SHPD itself makes an eligibility determination for a historic property.

1.3 Overview of Proposed Project Construction

The design, method of construction, and timeline of the HHCTCP continue to be refined. This overview of proposed project construction is a synopsis of the information provided in the HHCTCP FEIS (USDOT/FTA and C&C/DTS 2010).

1.3.1 Fixed Guideway and Transit Stations

The HHCTCP involves construction of a fixed guideway rail transit system that will consist primarily of elevated structures. The main components of the fixed guideway system are: the elevated guideway structure, guideway foundation columns, and transit stations. The guideway foundation columns generally consist of a single 8-foot diameter column, spaced on average, about every 120 feet, with shorter or longer spans used where needed. Transit stations generally consist of elevated platform structures with ground-level entrance buildings. The subsurface impacts associated with the fixed guideway and transit stations will be primarily associated with excavations for the guideway foundation columns and excavations associated with the construction of ground-level station buildings, including subsurface utilities, elevator shafts, etc.

Two methods will be used to construct the guideway foundations, dictated by structural demands and existing subsurface conditions. Drilled shafts are the preferred foundation excavation method, which involves: drilling with a 6- to 10-foot diameter auger to depths of 50 to 150 feet, installation of a rebar cage in the shaft, and filling the shaft with concrete. Driven-pile foundations will be constructed where lateral loads, geotechnical, or other site conditions prohibit the use of drilled shafts. Construction of driven-pile foundations involves: excavations to accommodate the pile cap; pile driving by striking the pile with a heavy weight, vibrating the pile or jacking the pile into the ground; and forming and casting the pile cap with concrete.

1.3.2 Support Facilities

Ancillary support facilities for the transit system include maintenance and storage facilities and traction power substations. These facilities will be constructed at ground level, adjacent to the transit corridor. Subsurface impacts will include: grading of the facility locations and excavations for building foundations, subsurface utility installation or relocation, and landscaping.

1.3.3 Ancillary Impacts

Project construction will require relocation of existing utility lines within the project corridor that conflict with the proposed project design. The nature and extent of utility relocations in the study area are still being determined but, as shown in Table 1, present estimates are that the vast majority of subsurface impacts will be ancillary impacts (particularly for utility relocation, roadway work and building demolition).

Guideway foundation excavations will extend below the water table, potentially creating significant need for the management of displaced water and/or drilling slurry. It is unclear at this time how wastewater and drilling slurry will be managed. De-watering pits may be excavated to temporarily collect and treat wastewater and drilling slurry prior to reuse or disposal.

Construction staging areas will be needed to provide adequate space for construction equipment, stockpiling and transfer of construction materials, parking, and other construction-related activities. While the use of the proposed ancillary maintenance and storage facility areas and transit stations have been identified as potential staging areas, additional locations may be needed. The locations of additional construction staging areas have not yet been determined. Grading of the construction staging areas may be necessary.

1.3.4 Summary of Subsurface Impacts

While the construction of the “touch down” facilities of the three transit stations and the excavations for the column foundations for the fixed guideway may be the most obvious project-related subsurface impacts, the data available to us is that collectively, these will account for only an estimated 9.05 % of the area of project-related subsurface impacts.

The utility relocations needed for this project are quite substantial. The “dry” utilities including electric and gas line relocations are estimated to account for a third (33%) of the ground disturbance.

The “wet” utility relocations including water, sewer, and storm sewer improvements are anticipated to account for about 20% of the project-related subsurface impacts.

Demolition is anticipated to account for about 10% of project-related subsurface impacts. Existing building demolition will include excavations to remove building foundations and associated utilities and grading of the cleared land surface once demolition is done.

1.4 Environmental Setting

1.4.1 Natural Environment

The study area lies at about 40 foot elevation on what has come to be referred to in the archaeological literature as the Hālawa-Moanalua Plain. The plain is largely formed by raised reef limestone shelf overlain by clay alluvium and colluvium eroding down from the lower slopes of the Koʻolau volcanic range and sediments transported by air and water from various post-erosional volcanic events. Three of these post-erosional volcanic craters lie close to the HHCTCP alignment: (1) Makalapa Crater just south of Hālawa Stream and about 300 m to the east of the alignment along Kamehameha Highway, (2) Āliamanu Crater also just south of Hālawa Stream and about 1.1 km to the east of the alignment along Kamehameha Highway, and (3) Salt Lake (Āliapaʻakai) Crater about 800 meters to the north of the North Nimitz Highway portion of the Airport Section 3 corridor (see Figure 1). These three volcanic events significantly displaced the lower reaches of Moanalua Stream, pushing the stream to the east. Hālawa Stream is effectively the northwest end of the Airport Section 3 study area, entering the East Loch of Pearl Harbor about 250 m west of the HHCTCP alignment along Kamehameha Highway (Macdonald and Abbott 1974:374-5).

1.4.1.1 Overview of Soils

The Airport Section 3 study area traverses (Figure 5) Mixed Fill Land (FL) as it heads south from the Hālawa Stream crossing. After about 500 m, the Kamehameha Highway alignment forms the effective transition zone between Mixed Fill Lands on the *makai* side and Kokokahi very stony clay, 0 to 35 percent slopes (KTKE), lands on the *mauka* side. In the vicinity of Radford Drive are small exposures of Rock Land (rRK) bracketing a small exposure of Hanalei silty clay, 2 to 6 percent slopes (HnB), soil. Most of the central North Nimitz Highway portion of the Airport Section 3 corridor alignment traverses Makalapa clay, 6 to 12 percent slopes (MdC), soils. As the alignment heads *makai* and extends east along Aolele Street, it traverses Keaau stony clay, 2 to 6 percent slopes (KmaB), soils with fill land on the *makai* side. In the vicinity of Lagoon Drive are Ewa silty clay loam soils, moderately shallow, 0 to 2 percent slopes (EmA), soils. The eastern end of the study area is again Mixed Fill Land (Figure 5).

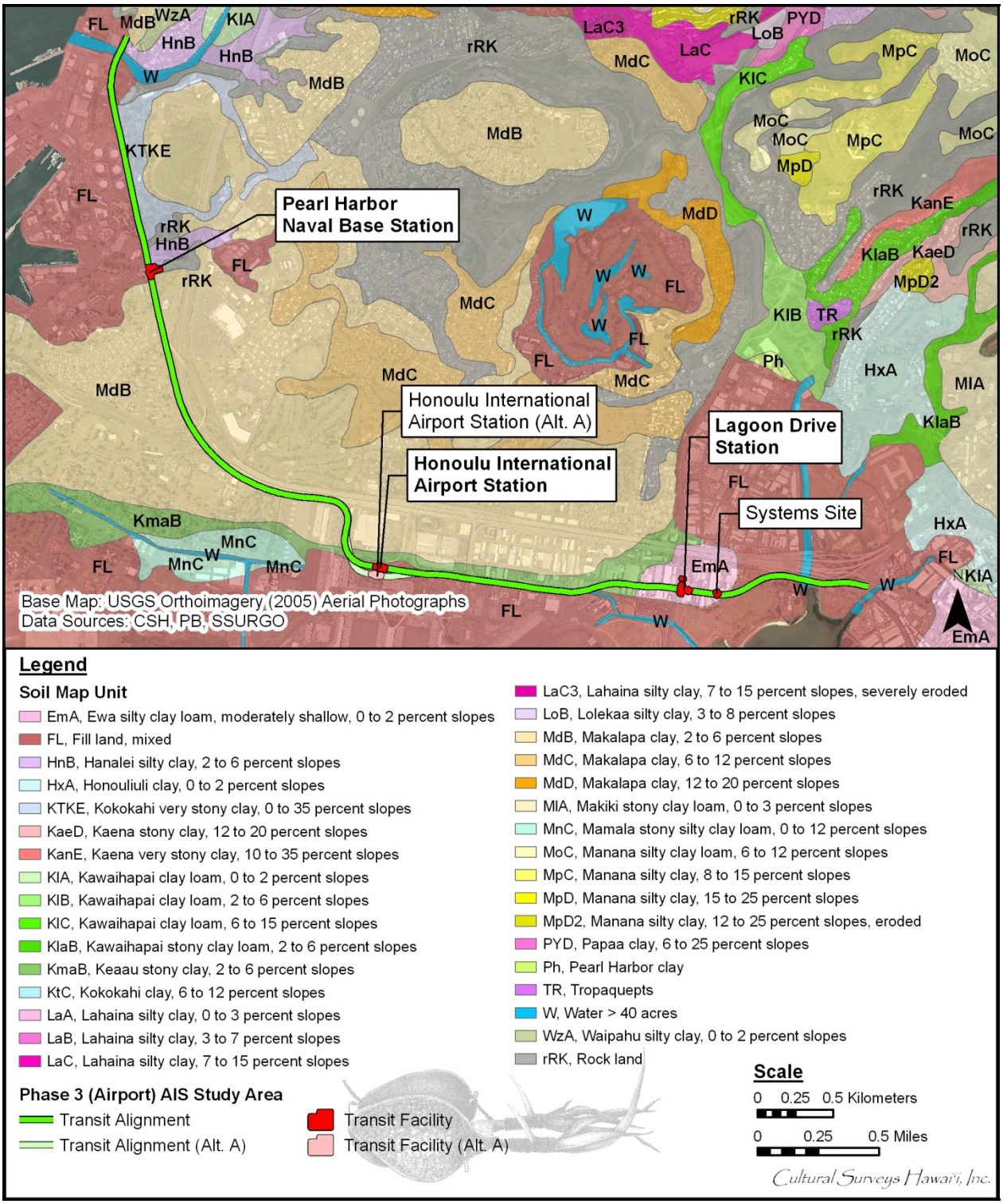

Figure 5. Soils of the Airport Section 3 study area (base map source: U.S. Geological Survey Orthoimagery 2005/ data sources: CSH, PB, SSURGO)

Mixed Fill Land (FL) is common near Pearl Harbor and includes “areas filled with materials dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources” (Foote et al. 1972:31).

Kokokahi very stony clay, 0 to 35 percent slopes (KTKE), consists of moderately well drained soils on talus slopes and alluvial fans developed in colluviums and alluvium derived from basic igneous rock with many stones and boulders on the surface. These soils are used for pasture and home sites (Foote et al. 1972:73).

Rock Land (rRK) is made up of areas where exposed bedrock covers more than 90 percent of the surface. This land type is not suited to farming (Foote et al. 1972:119).

Hanalei silty clay, 2 to 6 percent slopes (HnB), is typically found on stream bottoms and flood plains. Soil runoff is slow and the erosion hazard is slight. This soil is used for sugarcane, taro, and pasture (Foote et al. 1972:38).

Makalapa clay, 6 to 12 percent slopes (MdC), soil is a dark to very dark grayish-brown clay to silty clay loam understood to be derived primarily from volcanic tuff. The permeability and run-off is slow, and erosion hazard is slight, but these soils have a high shrink-swell potential. These soils are associated with urban development and pasture (Foote et al. 1972:87-88).

Keaau stony clay, 2 to 6 percent slopes (KmaB), consists of poorly drained soils on coastal plains developed in alluvium deposited over raised reef limestone or consolidated coral sand with sufficient stones to hinder machine cultivation (Foote et al. 1972:64-65).

Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes (EmA), soil develops in alluvial fans and terraces with a depth to coral limestone of 20 to 50 inches. Runoff is very slow. These lands are used for sugar cane, truck crops, and pasture (Foote et al. 1972:29-30).

Summary of Soils

In general, the soil types of the Airport Section 3 study area are not good agricultural soils. Exceptions are the small patches of Hanalei silty clay and Ewa silty clay loam.

More than 50% of the Airport Section 3 corridor is shown to be fill lands (Figure 5) which suggests both that extensive portions of the former natural land surface may have been close to the water table (or under water) and that these lands have been extensively disturbed by massive grubbing, grading and fill activities, including historic land reclaimation projects.

Fresh Water

The rainfall at the Honolulu International Airport is estimated at 8.0 inches (203 mm) a year (Pacific Disaster Center 2013) which would not support dryland agriculture. Except in the immediate margins of Hālawa Stream no traditional Hawaiian agriculture would be expected in the Airport Section 3 study area. It is about 5.25 km between the mouth of Hālawa and Moanalua streams making this a particularly dry stretch of O‘ahu’s coast. The low rainfall and distance to streams would have discouraged traditional Hawaiian and early historic habitation.

1.4.2 Built Environment

The Airport Section 3 study area is in an urban landscape of buildings and concrete and asphalt paved surfaces with minimal open or landscaped areas. Nearby undeveloped areas away from streams are mostly in *kiawe* (*Prosopis pallida*) and *koa haole* (*Leucana glauca*) scrub.

1.4.3 Land Jurisdiction

Land jurisdiction includes federal, state, city and private lands (Table 1 and Table 2). Federal lands bounded by Radford Drive, Tarawa Drive, and Kamehameha Highway are proposed for the Pearl Harbor Naval Base Station. State lands include portions of the corridor along Kamehameha Highway, North Nimitz Highway, the H-1 Freeway, Aolele Street, and the Honolulu International Airport. City lands include portions of the corridor along Ualena Street and Waiwai Loop.

Table 1. Land Ownership of Non-Right-of-Way Properties in the Airport Section 3 Study Area

TMK	Owner	Type	Location
9-9-003:066	Harry B. Kronick Trust	Private	Kamehameha Hwy. and Kalaloa St.
9-9-002:004	United States of America	Federal	Kamehameha Hwy. - Hālawa Dr. to Radford Dr.
1-1-002:001	U.S. Postal Service	Federal	Nimitz Hwy. and Aolele St.
1-1-002:004	United States of America	Federal	Nimitz Hwy. and Main St.
1-1-003:001	State DOT Airports Division	State	Airport
1-1-003:011	State DOT Airports Division	State	Airport
1-1-003:010	State DOT Airports Division	State	Airport
1-1-003:009	State DOT Airports Division	State	Airport
1-1-004:018	State DOT Airports Division	State	Ualena St.
1-1-004:017	State DOT Airports Division	State	Ualena St.
1-1-004:015	State DOT Airports Division	State	Ualena St.
1-1-004:014	State DOT Airports Division	State	Ualena St.
1-1-004:013	State DOT Airports Division	State	Ualena St.
1-1-004:012	State DOT Airports Division	State	Ualena St.
1-1-016:015	John V. Brewer Trust	Private	Waiwai Loop and Lagoon Dr.
1-1-016:014	Chevron USA Inc.	Private	Waiwai Loop and Lagoon Dr.
1-1-016:016	International Express Inc.	Private	Waiwai Loop
1-1-016:013	Queen Bee Limited Partnership	Private	Waiwai Loop
1-1-016:017	Waiwai Loop Rental Inc.	Private	Waiwai Loop
1-1-016:012	Window World Inc.	Private	Waiwai Loop
1-1-016:007	Watumull Enterprises Ltd.	Private	Waiwai Loop
1-1-016:006	Alert Holdings Group Inc.	Private	Waiwai Loop
1-1-016:005	2676 Waiwai Loop LLC	Private	Waiwai Loop
1-1-003:006	State DOT Airports Division	State	Ke‘ehi Lagoon Park
1-1-003:004	State DOT Airports Division	State	Ke‘ehi Lagoon Veterans Memorial
1-1-003:138	State of Hawai‘i	State	Moanalua Stream
1-1-003:003	State DOT Airports Division	State	Nimitz Hwy and Moanalua Stream

Table 2. Land Ownership of the Right-of-Way Properties in the Airport Section 3 Study Area

ROW	Owner
Kamehameha Hwy	State of Hawai‘i
H-1 Freeway	State of Hawai‘i
N Nimitz Hwy	State of Hawai‘i
Aolele St	State of Hawai‘i
Ualena St	City and County of Honolulu
Waiwai Loop	City and County of Honolulu

1.5 Introduction to Appendices

This Volume 2 contains six appendices (A–F), each of which contains data that augments the detailed discussions provided in this volume (Volume 1). These appendices are briefly summarized below.

Appendix A: Inoa ‘Āina (Place Names), Wahi Pana (Storied Places) and Traditional Cultural Places

This appendix presents traditional, archival, historical, and ethnographic data generated by four recent studies, several of which were conducted in conjunction with or in support of the HHCTCP. The appendix augments the Mythological and Traditional Accounts (Section 2) and the Historic Background (Section 3) discussions in Volume 1.

Appendix B: Land Commission Awards in the Vicinity of Airport Section 3 Project Area

This appendix presents transcriptions and/or photocopies of original award information for seven Land Claim Awards identified in the immediately vicinity of the Airport Section 3 corridor. These transcriptions contain information obtained from the following sources: Land Commission Awards (LCAs), Foreign Testimony, Native Testimony, and a review of historical documents and maps. This information appeared earlier in Appendix A of the Archaeological Inventory Survey Plan prepared for this project (Hammatt and Shideler 2011).

Appendix C: Archaeological Inventory Survey Research Design

The appendix provides the research design developed for this project and previously presented in Sections 7 and 9 of the AISP (Hammatt and Shideler 2011). The research design has been updated to address all changes in test excavation locations that have occurred since the AISP was reviewed and accepted by SHPD.

Appendix D: Consultation Letters and Consultation Responses

The appendix provides consultation letters and responses pertaining to the initiation, development, submittal, review, and acceptance of the Airport Section 3 AISP (Hammatt and Shideler 2011) and the Addendum Airport Section 3 AISP (Hammatt and Shideler 2013).

Appendix E: Ground-Penetrating Radar Survey for Airport Section 3, Test Excavation Locations T-001 through T-047

The appendix provides a detailed discussion of the ground-penetrating radar (GPR) survey conducted for Airport Section 3. This survey involved GPR data collection for each of the 47 test excavation locations (T-001 through T-047) examined during the archaeological inventory survey of this portion of the transit corridor. This GPR study tested the efficacy of GPR technology for identifying human burial remains and other types of subsurface archaeological features. The conducting of this GPR efficacy study was identified as a major component of the current AIS in Section 7.4 of the AISP (Hammatt and Shideler 2011). Pertinent GPR data appears in the text for each of the test excavation locations (T-001 through T-047) in Section 7 in Volume 1, while Appendix E presents an overview of the GPR study and summarizes the findings.

Appendix F. Pollen Analysis Report

The appendix consists of a pollen analysis report prepared by Linda Scott Cummings with assistance from R. A. Varney, PaleoResarch Institute, Golden, Colorado. This pollen analysis included samples collected as part of the current Airport Section 3 study. Also included are samples from other portions of the transit corridor, e.g., City Center Section 4. Pertinent pollen data obtained for individual test excavation locations appears in Section 7 in Volume 1, while Appendix F presents an overview of the pollen study objectives, methods, and findings.